



PHOTOGRAPHY FAQ

Q You often refer to image noise. What causes it, and can I avoid it?

A Image noise is a speckled graininess in photos where the colour of each pixel is slightly different to what it should be. This is caused by inaccuracies and interference on the charge-coupled device (CCD). Capturing and measuring the amount of light at five million points on a sensor half the size of a postage stamp isn't easy, so it's inevitable that some errors will creep in.

These inaccuracies are random; any one pixel may have too much or too little red, green or blue, and the error in one pixel bears no relation to those around it. Therefore, image noise won't affect the overall colour balance of the photo. When the picture is viewed at a reasonably small size, either onscreen or when printed, these errors will blend together to give the impression of a smooth image. However, when viewed at 100 per cent magnification or printed at a large size, the graininess can be quite noticeable and unpleasant.

Some cameras are more susceptible to image noise than others, but there are certain conditions and settings that affect how much noise ends up in your pictures. As the margin of error is fixed, the more light you capture, so the less difference the errors will make. For this reason, image noise is more of a problem in low lighting. Using high ISO settings exacerbates the problem. High ISO settings capture an underexposed photo and brighten it up with digital processing, which allows low-light photography without resorting to excessively long shutter times. However, when the dark image is boosted, so too are the errors, so high ISO settings increase image noise.

One way to reduce image noise is to select a low ISO setting and use a tripod to stabilise the camera for a longer exposure. Another way is to shoot at lower resolutions or reduce the resolution using software. This combines neighbouring pixels to partly cancel out the noise in each one. You'll lose some detail, so you won't be able to print such big enlargements, but it should result in smoother colours.

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▲ Image noise is speckled graininess caused by inaccuracies and interference on the CCD

REVIEW DIGITAL CAMERA

ACER CI-6330

RATING ★★★★★

PRICE £140 inc VAT

SUPPLIER <http://uk.insight.com>

DETAILS www.acer.co.uk

"Solid fun" are the words emblazoned on the CI-6330's packaging, which forms an image of a rather large camera. The camera itself is chunky but elegant, and it has an air of resourcefulness we wouldn't normally expect at this price.

The CCD is capable of recording 6-megapixel images, and the mode dial has shutter priority, aperture priority and full manual modes to complement the usual auto, scene preset and video modes. Two rechargeable AA batteries and a charger are supplied, although there's no labelling to show which way to insert them into the camera.

The controls are straightforward and well laid out, but the camera is slow in use; it takes six seconds to take a shot from power-up and this increases to 12 seconds when the flash is required. Browsing pictures in memory is slow, too, and pointless text information momentarily obliterates the view each time you move to the next picture.

The priority and manual modes are a big bonus for creative photographers, but the one-second maximum shutter length is too short and there's no Exposure Value (EV) readout to help with adjustments. The screen's brightness changes to reflect these settings but only when the shutter is half-pressed, not continuously.



Image quality was above average, with none of the sharpness issues we've seen from other Acer cameras. Outdoor shots were pleasantly exposed, although we found skin tones had a tendency to be overexposed. The camera also sometimes focused on the background, even though our subject was in the centre of the frame. Indoor shots were decent, but the flash produced pasty skin tones and had a limited range.

The CI-6330 is a well-balanced camera, but even at this price its image quality needs to be better to warrant our unreserved enthusiasm.

Ben Pitt



Low price; manual exposure settings



Slow to power up; a few image-quality niggles

SPECIFICATIONS 6.2 million pixels (2,864x2,152 pixels), 3x optical zoom, SD slot (12MB internal). **Part code** AM.63303.005

HOTLIST DIGITAL CAMERA

CANON PowerShot S2 IS

RATING ★★★★★

PRICE £333 inc VAT

SUPPLIER www.dabs.com

DETAILS www.canon.com

Canon's PowerShot S2IS might weigh just over half a kilo, but it's incredibly comfortable to use. Its bright 12x zoom lens is mechanically stabilised, which helps the 5-megapixel sensor produce sharp, blur-free pictures, even when shooting at full zoom from your hand. It takes rich, warm stills, and records movies at 640x480 and 30fps. A stunning macro mode lets you focus on objects right up to the lens surface. If you want a camera that has a big zoom lens and plenty of shooting options, this is the one to buy.



SPECIFICATIONS 2,560x1,920 resolution, stabilised 12x zoom lens (36-432mm), 16MB SD card. **Part code** 9883A007AA

HOTLIST DIGITAL CAMERA

NIKON CoolPix 5600

RATING ★★★★★

PRICE £134 inc VAT

SUPPLIER www.currys.co.uk

DETAILS www.nikon.co.uk

Nikon's CoolPix 5600 is a low-cost, no-frills camera. The lack of manual settings will put off the amateur photographer, but the point-and-click crowd will love its ease of use and excellent image quality.

The 5-megapixel sensor captures photographs in fine detail and exemplary colours in a range of conditions. Quite a bargain.

SPECIFICATIONS 5 megapixels (2,592x1,944 pixels), 3x optical lens, 14MB internal memory and SD slot. **Part code** VAA310EO





REVIEW DIGITAL CAMERA

KONICA MINOLTA

Dynax 5D

RATING ★★★★★

PRICE £480 inc VAT

SUPPLIER www.jessops.comDETAILS www.konicaminolta.co.uk

Owning a digital SLR camera is no longer just a pipe dream for amateur photographers, and there are excellent models such as Nikon's D50 (see our Hotlist, below) available for under £500. The latest contender is Konica Minolta's Dynax 5D. On the surface it's very similar to the D50. Both cameras have a top resolution of 3,008x2,000 pixels. They both weigh around 850g, and their plastic bodies feel solid, durable and equally comfortable to use. And just a few pounds separate their prices.

However, there are some notable differences between the two models. Kit lenses bundled with digital SLRs tend to be fairly basic, but the 5D's zoom range is 18-70mm, compared with the D50's 18-55mm. Its 38cm shortest macro focus isn't that much to get excited about, but the camera body will work with any lens that uses the Minolta A Mount.

Rather than using a second, passive LCD screen to show camera settings, the 5D displays them on its sizable rear-mounted 2.5" LCD. This makes sense as the SLR screen can't be used for composing shots because light passing through the lens is sent to the optical viewfinder rather than the CCD. However, the LCD depletes the battery faster than a passive screen would. The onscreen text is



re-oriented when the camera is held in portrait position, and it even switches off to avoid distracting your view when you bring the camera up to your eye.

Manual controls and options are comprehensive and quickly accessible from a generous set of dedicated buttons. The Dynax 5D is quick to react, too, with near-instantaneous startup, a 2fps continuous mode and blisteringly fast browsing of pictures stored on the card. However, USB transfers are painfully slow at just 0.35MB/s. We'd advise you to budget for a card reader as well as a CompactFlash card, as no card is supplied with the camera.

The Dynax 5D's most unusual feature is optical image stabilisation, which reduces the blur caused by camera shake. Furthermore, the mechanism is built into the CCD rather than the lens so you don't lose the feature when you swap lenses. We found

that we often – but not always – achieved sharper pictures with the feature switched on, so it's useful but not particularly reliable.

As we'd expect from a camera that costs nearly £500, image quality was extremely high throughout our tests. Colours had a purity and subtlety that you simply don't get from cheaper compact cameras. The flash performed impeccably at close range and when illuminating an entire room.

In dark conditions without the flash, ISO settings of up to 800 produced shots with minimal image noise, while ISO 1600 photos still looked smooth when printed at 6x4". Even ISO 3200 gave serviceable results, although areas of solid colour looked grainy. It was usually necessary to switch the white balance to Tungsten for indoor shots, but a dedicated dial makes this easy to achieve. However, direct comparison to the Nikon D50 revealed that the D50 tended to capture more flattering colours on Auto settings. High-contrast subjects were the Dynax 5D's biggest hurdle, occasionally blowing out highlights and giving a slight blue cast to pictures.

The image stabilisation, large screen and extended zoom range are all compelling reasons to choose the Dynax 5D over the Nikon D50. However, the Nikon's superior colour accuracy just gives it the edge.

Ben Pitt

✓ A feature-packed digital SLR at a remarkable price

✗ Nikon's D50 often takes better-exposed photos

SPECIFICATIONS 6.1 megapixels (3,008x2,000 pixels), 18-70mm lens, CompactFlash slot. **Part code** V2186911A

HOTLIST SCANNER

MUSTEK

Be@rpaw 4800TA Pro II

RATING ★★★★★

PRICE £60 inc VAT

SUPPLIER www.dabs.comDETAILS www.mustek.co.uk

It may have been around for a while, but this scanner still offers the entry-level buyer above-average transparency results. It's easy to operate, with a simplified control panel for those who find the TWAIN interface too much. Scan quality isn't perfect, it's not as fast as many other scanners and there are no Mac drivers, but it's a great value all-rounder.

SPECIFICATIONS 2,400x4,800 optical resolution, 35mm, slide transparency adaptor, USB Hi-Speed interface.
Part code 98-155-00010



HOTLIST DIGITAL CAMERA

NIKON

D50

RATING ★★★★★

PRICE £475 inc VAT

SUPPLIER www.jessops.comDETAILS www.nikon.co.uk

Nikon's D50 is the cheapest digital SLR camera we've reviewed. It offers great versatility and, like all SLRs, changeable lenses. The supplied lens is OK, but you'll probably want to upgrade it.

The D50 captures photos at a resolution of 3,008x2,000, and we found its shots to be rich and detailed and to exhibit a subtleness of colour that's not found in a compact camera. This camera is truly excellent value.

SPECIFICATIONS 3,008x2,000 resolution, 18-55mm lens (27-83mm 35mm equivalent), takes SD memory. **Part code** D50(UK) 18-55KIT SI



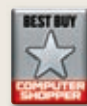
HOTLIST DIGITAL CAMERA

CANON

PowerShot A610

RATING ★★★★★

PRICE £185 inc VAT

SUPPLIER www.savastore.comDETAILS www.canon.co.uk

Canon's PowerShot A610 is fairly large, but it fits comfortably in your hand. Its picture quality is amazing, and it coped flawlessly with tricky lighting conditions such as high contrast and near darkness.

With its excellent video mode and manual focus, the A610 is better than many more expensive cameras.

SPECIFICATIONS 5 megapixels (2,592x1,944 pixels), 4x optical zoom, 32MB SD card. **Part code** 0322B007AA





REVIEW DIGITAL CAMERA

FUJIFILM
FinePix S5600

RATING ★★★★★

PRICE £230 inc VAT

SUPPLIER www.dabs.comDETAILS www.fujifilm.co.uk

Fujifilm's S5600 is an SLR-styled camera. The viewfinder is a low-resolution LCD rather than a direct view through the lens, but the design is more about comfortable handling than style.

The design also means there's room for a 10x optical zoom lens. There's no image stabilisation, though. There's also room for plenty of physical controls including dedicated buttons for exposure compensation, continuous modes (limited to three shots at top resolution) and an auto/manual focus switch. Manual focus isn't so useful, as the screen on the back of the camera and the one seen through the viewfinder don't show enough detail for accurate adjustment. There's also no numerical readout.

The other manual functions include shutter priority, aperture priority and full manual exposure, plus auto-bracketing, metering modes and white-balance presets. ISO settings range from 64 to 1600, an extraordinarily high figure for a compact digital camera. Pictures at this setting are noisy but not disastrously so, and ISO 800 is great for low-light photography without a tripod.

We found it difficult to get a bad photograph out of the S5600. It coped superbly in all sorts of lighting conditions, and we rarely had to deviate from the Auto mode. Skin tones were warm but natural; other shots were vibrant. One complaint is a slightly painted effect to pictures taken in low light when viewed at high magnification. This keeps the S5600 from scoring full marks. But it's a great performer that will satisfy those on a tight budget.

Ben Pitt



Satisfying to use; takes superb pictures



Slight artefacts from noise reduction; manual focus is impractical

SPECIFICATIONS 5 megapixels (2,592x1,944 pixels), 10x optical zoom, 16MB xD card. **Part code** N077080A

REVIEW DIGITAL CAMERA

BENQ
DC E520

RATING ★★

PRICE £141 inc VAT

SUPPLIER www.dabs.comDETAILS www.benq.co.uk

There are quite a few 5-megapixel cameras to choose between if you have £150 to spend, but most cut a few corners compared with models costing £200 or more. BenQ's DC E520 is an exception. It has an oversized 2.5" LCD screen, a lithium-ion battery, a 3x optical zoom and is housed in an ultra-compact aluminium case. It even has enough processing power to record VGA-resolution video in MPEG4 format.

Sadly, the processor doesn't provide particularly quick general operation. There's a four-second gap between shots, although this falls to three seconds if instant playback is switched off.

The camera is easy to operate, but suffers from a few annoying quirks. The power button must be held down for one second before the camera springs into life, which is a nuisance when you need to take a shot quickly. The shutter sound played through the speaker is useful to confirm when a picture has been taken, but the constant beeps for every button press are annoying. We would have liked audible confirmation for when the auto-focus has locked on to its subject, but none is given. Also absent is the ability to adjust shutter speed and aperture settings manually, although there are

white balance, ISO speed and metering options plus various scene presets.

Image quality was decent in our tests, with warm, bright colours and an excellent macro mode. However, all but the most brightly lit scenes suffered from image noise. A speckled graininess undermined the amount of detail that could be captured. Video capture didn't suffer from this, but was let down by overactive exposure compensation that caused videos to fluctuate in brightness.

We could overlook some flaws, but the image noise problem means this camera is best avoided.

Ben Pitt



Impressive specifications for the price



Excessive image noise

SPECIFICATIONS 4.9 megapixels (2,560x1,920 pixels), 3x optical zoom, SD slot (21MB internal). **Part code** 9J.T3567.90G

CHOOSING A...

FLATBED
SCANNER

If you're thinking of buying a flatbed scanner but wonder what features you need, look no further than our expert guide

1 A basic flatbed scanner (see specs in grey below) can produce surprisingly good scans if the mechanics and optics are up to scratch – something you can't tell without performing a test scan. The colour depth is often quoted, but this gives you no idea how faithful those colours will be, and poor focus can make a high optical resolution irrelevant. Disregard interpolated resolutions: they just blow up the scanned picture without adding any extra detail.

2 If you have a high workload, it's worth paying more for a faster scanner. The best can produce an A4 300dpi scan in 15 seconds and a preview scan – used to select a detail to scan – in around five seconds. If you have to scan a stack of paper, buy a scanner with an automatic document feeder (ADF).

3 A 300dpi scan is sharp to the human eye, but if you print it at twice the original size the final resolution is a grainy 150dpi. If you plan to print extreme enlargements you need a 1,200x2,400dpi, 2,400x2,400dpi or 2,400x4,800dpi flatbed. The mechanism and optics quality should also be increased accordingly.

4 Transparencies, such as slides and negatives, must be backlit to be scanned – look for a transparency adaptor. A 35mm film needs to be scanned at very high resolution to produce a decent-sized image. It is better to use a dedicated film scanner for such small items, as they can cope with dust and scratches automatically.

5 Beyond the standard TWAIN driver that provides compatibility with any scanner-aware software, decent image-editing and OCR software is useful.

FILL IN YOUR SPECS HERE
(Recommended minimum in grey)

SCANNING AREA: A4

OPTICAL RESOLUTION: 600x1,200dpi

INTERFACE: USB Hi-Speed

SOFTWARE: TWAIN driver